Claims

1. (original) A method of fabricating a transducer for reading magnetic transitions from a moving magnetic material comprising the steps of:

forming a magnetic sensor which is a spin valve; and

forming first and second leads for the magnetic sensor by:

fabricating first and second thin film tantalum pads in electrical contact with the magnetic sensor at first and second locations, first and second locations being noncontiguous;

fabricating thin film chromium pads on first and second tantalum pads; and

fabricating thin film rhodium pads on the thin film chromium pads.

2. (withdrawn) The method of claim 2 further comprising the step, executed before the step of forming a magnetic sensor, of structure of PtMn in a selected area where the magnetic sensor will be formed so that the structure of PtMn will be under the magnetic sensor.

3. (withdrawn) The method of claim 2 further comprising the step, executed before the step of fabricating the first and second thin film tantalum pads, of forming first and second hard bias structures on first and second sides of the structure of PtMn and in electrical contact with opposing lateral surfaces of the magnetic sensor, the thin film tantalum pads being deposited in electrical and physical contact with the first and second hard bias structures.

4. (withdrawn) The method of claim 3 the step of forming first and second hard bias structures further comprising depositing a layer of chromium followed by a layer of CoPtCr.

5. (withdrawn) The method of claim 3 wherein first and second hard bias structures further comprise an upper layer of CoPtCr which is respectively in contact with the thin film layer of tantalum in first and second leads.

6. (original) The method of claim 1 wherein the first and second locations are on opposing areas of an upper surface of the magnetic sensor and wherein the first and second tantalum pads are in physical contact with the upper surface of the magnetic sensor.

7. (original) The method of claim 1 further comprising the step of forming first and second hard bias structures disposed on opposing sides of the magnetic sensor and wherein first and second leads are respectively overlaid on first and second hard bias structures and first and second leads extend onto an upper surface of the magnetic sensor and are in physical contact with the upper surface of the magnetic sensor.

8. (withdrawn) The method of claim 3 wherein the thin film tantalum pads have a first thickness and the step of fabricating the thin film rhodium pads further comprises depositing the rhodium to a second thickness, the second thickness being greater than ten times the first thickness.

9. (withdrawn) The method of claim 1 further comprising the step of fabricating first and second hard bias structures disposed on opposing lateral surfaces of the magnetic sensor, and wherein the step of fabricating the first and second thin film tantalum pads further comprises forming the first and second tantalum pads on top of the first and second hard bias structures so that the first and second tantalum pads electrically contact the magnetic sensor through the first and second hard bias structures and an upper surface of the magnetic sensor being free from physical contact with the tantalum pads.

10. (withdrawn) The method of claim 9 further comprising the step of fabricating a structure of PtMn before forming the magnetic sensor and the step of forming the magnetic sensor further comprising positioning the magnetic sensor on the structure of PtMn.

11. (withdrawn) The method of claim 10 wherein the step of forming the first and second hard bias structures further comprises forming the first and second hard bias structures in contact with first and second lateral surfaces of the structure of PtMn.

12.(withdrawn) A method of fabricating magnetic transducer comprising the steps of:

depositing a layer of PtMn on a gap layer;

forming a magnetic sensor on the layer of PtMn, the magnetic sensor having first and second lateral surfaces with the layer of PtMn having an exposed area and a covered area that is covered by the magnetic sensor;

fabricating first and second hard bias structures on the exposed area of the layer of PtMn that are adjacent to the magnetic sensor, the first and second hard bias structures being in contact with first and second lateral surfaces of the magnetic sensor;

fabricating first and second tantalum pads on top of the first and second hard bias structures so that first and second tantalum pads make electrical contact with the magnetic sensor through the first and second hard bias structures and so that the first and second tantalum pads do not contact an upper surface of the magnetic sensor;

fabricating first and second chromium pads on top of the first and second tantalum pads so that first and second tantalum pads make electrical contact with the magnetic sensor through the first and second hard bias structures and the first and second tantalum pads and do not contact an upper surface of the magnetic sensor;

fabricating first and second rhodium pads on top of the first and second chromium pads so that first and second rhodium pads make electrical contact with the magnetic sensor through the first and second hard bias structures and the first and second tantalum pads and the first and second chromium pads and do not contact an upper surface of the magnetic sensor.

13. (withdrawn) The method of claim 12 wherein the step of fabricating first and second hard bias structures further comprises depositing CoPtCr to form an upper layer of and second hard bias structures.

14. (withdrawn) The method of claim 12 wherein the tantalum pads have a first thickness and the step of fabricating the rhodium pads further comprises depositing the rhodium to a second thickness, the second thickness being greater than ten times the first thickness.

15. (withdrawn) A method of fabricating magnetic transducer comprising the steps of:

depositing a layer of PtMn on a substrate layer;

forming a magnetic sensor on the layer of PtMn, the magnetic sensor having first and second lateral surfaces with the layer of PtMn having been etched away exposing the substrate layer except under the magnetic sensor;

fabricating first and second hard bias structures on exposed areas of the substrate layer that are adjacent to the magnetic sensor and the layer of PtMn under the magnetic sensor, the first and second hard bias structures being in contact with first and second lateral surfaces of the magnetic sensor;

fabricating first and second tantalum pads on top of the first and second hard bias structures so that first and second tantalum pads make electrical contact with the magnetic sensor through the first and second hard bias structures and so that the first and second tantalum pads do not contact an upper surface of the magnetic sensor;

fabricating first and second chromium pads on top of the first and second tantalum pads so that first and second tantalum pads make electrical contact with the magnetic sensor through the first and second hard bias structures and the first and second tantalum pads and do not contact an upper surface of the magnetic sensor;

fabricating first and second rhodium pads on top of the first and second chromium pads so that first and second rhodium pads make electrical contact with the magnetic sensor through the first and second hard bias structures and the first and second tantalum pads and the first and second chromium pads and do not contact an upper surface of the magnetic sensor.

16. (withdrawn) The method of claim 15 wherein the step of fabricating first and second hard bias structures further comprises depositing CoPtCr to form an upper layer of and second hard bias structures.

17. (withdrawn) The method of claim 15 wherein the tantalum pads have a first thickness and the step of fabricating the rhodium pads further comprises depositing the rhodium to a second thickness, the second thickness being greater than ten times the first thickness.